DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-007106
Date Inspected: 05-Jun-2009

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 700
OSM Departure Time: 1530
Location: Clackamas, OR

CWI Name:	Mike Gregson, Rob Walters			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☐ Yes	☐ No	☑ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Hinge K Pipe Beams

Summary of Items Observed:

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

OIW Fabrication Shop-Bay 3
Hinge-K Pipe Beam Assembly 102A-1: 6/5/09
a111-1 Forging to a110-1 Base Plate
QA Inspector spoke with lead QC Inspector Mike Gregson and Mr. Gregson explained that 100% ultrasonic weld inspection had been completed on the R3 critical weld repair (CWR-003 Rev. #1), a111-1/a110-1, for forging assembly 102A-2, designated as weld joint #W2-12/#W2-13. QA Inspector reviewed the applicable ultrasonic testing report (UT-2244-25-R3) and noted that OIW QC Inspector Rob Walters had performed the ultrasonic weld inspection on this date, after the 72 hrs. required cooling time and found one rejectable indication. QA Inspector noted that Mr. Walters performed the inspection utilizing a 60/70 degree transducer angle from face “A” side (exterior) and a 60 degree angle transducer from the face “B” (interior) side. QA Inspector performed 100% ultrasonic weld inspection on this R3 critical weld repair (CWR-003 Rev. #1), a124 a111-1/a110-1, for forging assembly 102A-2, designated as weld joint #W2-12/#W2-13and found one rejectable indication. QA Inspector performed the testing utilizing a 60/70 degree transducer angle from face “A” side (exterior) and a 60 degree angle transducer from the face “B” (interior) side. QA Inspector notified QC Inspector Mike Gregson of the testing

results and completed the applicable ultrasonic testing report (TL6027).

Hinge-K Pipe Beam Assembly 102A-2: 6/5/09
a111-2 Forging to a110-2 Base Plate
QA Inspector noticed this assembly 102A-2 was sitting idle, with a pending non-critical weld repair.

Hinge-K Pipe Beam Assembly 102A-3: 6/5/09
a111-3 Forging to a110-3 Base Plate
QA Inspector noticed this assembly 102A-3 was sitting idle, with a pending non-critical weld repair.

Hinge-K Pipe Beam Assembly 102A-4: 6/5/09
a111-4 Forging to a110-4 Base Plate
QA Inspector witnessed welder #H49, Mr. Rick Hinkle, FCAW tacking of various stiffener plates, to the base plate, piece mark identified as a110, for assembly 102A-4, in the flat position. QA Inspector noted Mr. Rick Hinkle was performing pre-heat, utilizing a single torch and recorded temperatures of approximately 350 F (176C). QA Inspector noticed QC Inspector Rob Walters was present to monitor in-process welding parameters (amps/volts) and continuous pre-heat temperatures. QA Inspector noted Mr. Rick Hinkle appeared to be tack welding in accordance with the applicable approved welding procedure specification (WPS 3049).

Hinge-K Pipe Beam Fuse Assembly 120A-1: 6/5/09
a124-6 Half Fuse to a124-7 Half Fuse
QA Inspector noticed this fuse assembly 120A-1 was sitting idle in OIW Bay 6, pending the stainless steel overlay process.

Hinge-K Pipe Beam Fuse Assembly 120A-2: 6/5/09
a124-3 Half Fuse to a124-11 Half Fuse
QA Inspector spoke with lead QC Inspector Mike Gregson and Mr. Gregson explained that 100% ultrasonic weld inspection had been completed on the R3 critical weld repair (CWR-005), a124-3/a124-11, for fuse assembly 120A-2, designated as weld joint #WM3-18. QA Inspector reviewed the applicable ultrasonic testing report (UT-2244-36) and noted that OIW QC Inspector Rob Walters had performed the ultrasonic weld inspection on this date, after the 72 hrs. required cooling time and found no rejectable indications. QA Inspector noted that Mr. Walters performed the inspection utilizing a 60/70 degree transducer angle from face “A” side (exterior) and a 60 degree angle transducer from the face “B” (interior) side. QA Inspector performed 100% ultrasonic weld inspection on this R3 critical weld repair (CWR-005), a124-3/a124-11, for fuse assembly 120A-2, designated as weld joint #WM3-18 and found no rejectable indications. QA Inspector performed the testing utilizing a 60/70 degree transducer angle from face “A” side (exterior) and a 60 degree angle transducer from the face “B” (interior) side. QA Inspector notified QC Inspector Mike Gregson of the testing results and completed the applicable ultrasonic testing report (TL6027).

Hinge-K Pipe Beam Fuse Assembly 120A-3: 6/5/09
a124-12 Half Fuse to a124-10 Half Fuse
QA Inspector noticed that the stainless steel overlay welding was in-process, on this fuse assembly 120A-3. QA Inspector witnessed welder #F17, Mr. Igor Frolov, performing electro slag welding (ESW) in the flat position, utilizing Soudokay brand Soudotape 316L stainless steel consumable strip. QA Inspector noted the first ESW

welding passes were complete, utilizing Soudokay brand Soudotape 309L stainless steel consumable strip and the second layer passes were in-process, approximately 50% complete. QA Inspector noticed QC Inspector's Mike Gregson and Rob Walters were present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QA Inspector spoke with QC Inspector Rob Walters and Mr. Rob Walters explained that welding amps were recorded as 1300 amps/24 volts, with and a pre-heat temperature of approximately 225 Fahrenheit. QA Inspector verified Mr. Craig Jacobson was currently qualified for this welding process/position and randomly recorded pre-heat temperatures of approximately 250 Fahrenheit. QA Inspector noted that Mr. Craig Jacobson appeared to be in compliance with the applicable approved welding procedure specification (WPS 7003). See picture below of fuse assemble 120A-3.

Hinge-K Pipe Beam Fuse Assembly 120A-4: 6/5/09
a124-13 Half Fuse to a124-4 Half Fuse
QA Inspector noticed that this fuse assembly 120A-4 was sitting idle, pending 100% magnetic particle testing on the exterior rough machined surface.

Hinge-K Pipe Beam Fuse Assembly 120A-5: 6/5/09
a124-14 Half Fuse to a124-2 Half Fuse
A&G Machining
QA Inspector spoke with A&G Machining and A&G explained that OIW machinist would probably be arriving on 6/8/09 to verify roundness measurements and release this fuse assembly 120A-5 to A&G, for rough machining.

Hinge-K Pipe Beam Fuse Assembly 120A-6: 6/5/09
a124-1 Half Fuse to a124-9 Half Fuse
QA Inspector randomly witnessed welder #S53, Mr. Jerry Shepherd, perform submerged arc welding (SAW) on CJP (AWS D1.5 B-U3c-S), half fuse pipe assembly, (piece mark identified as a124-1), to half fuse pipe assembly, (piece mark identified as a124-9), in the flat position (1G). QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the OIW welder #S53, was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4020).
QA Inspector noticed QC Inspector's Mike Gregson and Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Jerry Shepherd was in compliance with the applicable welding procedure specification (WPS 4020).
QA Inspector verified Mr. Jerry Shepherd was currently qualified for this welding process/position and performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit. QA Inspector also recorded random, in-process welding parameters (amps/volts) of 400 amps and 25 volts, which is in compliance with the OIW welding procedure specification (WPS 4020). See 120A-6 picture below.

Hinge-K Pipe Beam Sub-Assembly a124-5: 6/5/09
a125 & b125 Ring Stiffeners to a124-5 Half Fuse
QA Inspector randomly witnessed OIW welder #O6, Mr. Tim O'Brian, performing submerged arc welding on the b125 internal ring stiffener to a124-1 half fuse, designated as weld joint #WM3-07. QA Inspector noticed the submerged arc welding was being performed in the flat position and verified Mr. Tim O'Brian was currently qualified for this welding process/position and randomly recorded pre-heat temperatures of approximately 350 F, which is in accordance with the applicable welding procedure specification (WPS 4020). QA Inspector randomly recorded in-process welding parameters of 380 amps and 25 volts and noticed that QC Inspector Rob Walters was

present to randomly verify in-process welding parameters (amps/volts) and pre-heat temperatures. QA Inspector noted that the submerged arc welding being performed by Mr. Tim O'Brian, appeared to be in compliance with the applicable welding procedure specification (WPS 4020).

OIW South Storage Yard: 6/5/09
QA Inspector noticed the following half-fuse sub assemblies were sitting idle, pending submerged arc welding on the internal stiffener rings, piece marks identified as a125 & b125: a124-8, a124-15 and a124-16.

Material, Equipment, and Labor Tracking
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 6 OIW production personnel and 2 QC Inspectors.

Summary of Conversations:
As noted above.
Comments
This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer